UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF NEW YORK

Lashawn Sharpe, individually and on behalf of all other similarly situated,

Plaintiff,

-against-

A & W Concentrate Company and Keurig Dr Pepper Inc.,

Defendants.

Case No.: 1:19-cv-00768 (BMC)

DECLARATION OF DANA KRUEGER

I, Dana Krueger, declare as follows:

1. I am the President of Krueger Food Laboratories, Inc., an independent food analysis laboratory. I hold a Bachelor of Science degree in Chemistry from the Massachusetts Institute of Technology and am certified by the Institute of Food Technologists as a Certified Food Scientist. I have been a food scientist for more than 35 years and am a Fellow of AOAC International, which develops and validates standards, methods and technologies for ensuring the safety and integrity of food and beverage products around the world. I have published numerous peer-reviewed articles concerning detection of chemicals in food and beverages, including vanillin.

2. Krueger Food Laboratories, Inc. is an independent food testing and consulting laboratory founded in 1984. Krueger Food Laboratories, Inc. is a full service analytical testing laboratory that specializes in fruit juice and flavor analysis. It routinely analyzes food and beverage products to determine the presence or absence of natural vanilla extract, and maintains a database of authentic vanilla extract compositional data.

3. Krueger Food Laboratories, Inc. and I have been retained in this matter for Dorsey & Whitney LLP to analyze A&W Root Beer, A&W Cream Soda, and certain ingredients of each beverage. I also have been asked to comment on testing of A&W Root Beer and A&W Cream Soda undertaken on behalf of the plaintiff in this lawsuit.

4. Both root beer and cream soda are extremely complex products to analyze. The report produced on behalf of plaintiff by Alliance Technologies, for example, identifies compounds in A&W Root Beer including furfural; 2,4-dimethyl-1-heptene; benzoic acid; 1,2,3,4-tetrahhydronaphtalene-d12; dodecane; naphtalene-d8; methyl salicylate; 5-hydroxymethyl-2-furancarboxaldehyde; 1,3-bis (1,1-dimethylethyl)-benzene; 1-methyl-4-(1-propenyl)-benzene; isotridecanol; 7-methyl-1-undecene (1); 7-methyl-1-undecene (2); hexadecane; ethyl vanillin and ethyl citrate. The same Alliance Technologies report identifies compounds in A&W Cream Soda including 1,2-propanediol; 2,4-dimethyl-1-heptene; benzoic acid; naphtalene-d8; 2-5-hydroxymethyl-2-furancarboxaldehyde; 1,3-bis (1,1-dimethylethyl)-benzene; vanillin; ethyl vanillin; 3,4-dihydro-2H-1-benzopyran-2-one; and ethyl citrate. Close examination of both chromatograms shows that they both also include a sizable number of minor components which were not identified. In such complex mixtures of chemicals, it can be extremely difficult to detect flavor compounds such as those from vanilla extract, which would be expected to be present in relatively small concentrations. This can be due both to limits to the instrument sensitivity, as well as the effect of interference from other co-eluting substances, particularly those, found in larger concentrations. (In root beer, for example, the primary flavor compound is methyl salicylate, which imparts a wintergreen-like flavor.) These limitations can obscure the ability of the method to detect the components of vanilla extract.

5. Krueger Food Laboratories, Inc., under my direct supervision, tested samples taken from 2-liter bottles of A&W Root Beer and A&W Cream Soda that I had purchased at a local supermarket. Unsurprisingly, these tests proved inconclusive, as the chromatograms contained large interfering peaks – probably from benzoic acid derived from the sodium benzoate preservative in each beverage, as well as methyl salicylate in the root beer product – that obscured substances indicative of the presence of natural vanilla.

6. Krueger Food Laboratories, Inc., under my direct supervision, also tested samples of flavorings used by A&W Concentrate Company in the production of A&W Root Beer and A&W Cream Soda, respectively, using high performance liquid chromatography ("HPLC"), a well-validated technique widely used in the vanilla industry for identification and characterization of vanillin.

7. The first flavoring tested was labeled 20032412 Lot 119212 Batch 389475 Vanilla Extract 2X. HPLC analysis of the Vanilla Extract 2X flavoring yielded the following results:

20032412 Lot 119212 Batch 389475 Vanilla Extract 2X		
Hydroxybenzoic Acid	mg/L	111
Hydroxybenzaldehyde	mg/L	214
Vanillic Acid	mg/L	467
Vanillin	mg/L	2840

These results are typical for a natural vanilla extract of approximately two-fold concentration (that is, a vanilla extract with twice the strength of typical store-bought vanilla extracts). All of the substances indicative of real vanilla extract are present and in relative concentrations typical of vanilla extract.

8. The second flavoring tested was labeled 34102564 Lot 399519 Vanilla Flavor WONF. (WONF refers to "with other natural flavors.") HPLC analysis of the Vanilla Flavor WONF yielded the following results:

34102564 Lot 399519 Vanilla Flavor WONF		
Hydroxybenzoic Acid	mg/L	40
Hydroxybenzaldehyde	mg/L	81
Vanillic Acid	mg/L	72
Vanillin	mg/L	15430

These results are typical of a vanilla/vanillin flavor of one-fold natural vanilla extract fortified with added vanillin.

9. It is my understanding that Vanilla Extract 2X flavoring is used in A&W Root Beer and that the Vanilla Flavor WONF flavoring is used in A&W Cream Soda. If this is so, it is my opinion, to a reasonable degree of scientific certainty, that both A&W Root Beer and A&W Cream Soda contain natural vanilla as an ingredient.

10. I have reviewed the report of Alliance Technologies, a testing laboratory engaged by the Plaintiff in this action. The Alliance Technologies report is attached as Exhibit 1 to the September 12, 2019, report of Daphna Havkin-Frenkel.

11. Alliance Technologies employed gas chromatography mass spectrometry ("GCMS") in its analysis. GCMS involves volatilizing a solution by heating and then carrying the volatized vapor into a chromatographic tube using an inert gas, such as helium. The various compounds in the vapor then interact with a coating inside the tube. Different compounds interact with the coating differently and therefore pass through the tube at different rates. The greater the volatility of a compound, the faster it passes through the tube. In this way, various compounds are separated by the time spent passing through the tube. At the end of the tube, the compounds are bombarded by electrons from a filament and are converted to ions. A mass

analyzer is then used to separate the ions by the ratio of their mass to their ionic charge. Measurements of the ions are then plotted and compared against a database of known mass spectra to identify particular chemicals.

12. The data from a GCMS analysis can usually be collected in either of two ways: either collecting data from all of the ion masses produced (TIM or total ion mode) or collecting data only from some particular ion masses associated with the substances of particular interest (SIM or selected ion mode). TIM mode is useful for general screening of a sample, for the detection and identification of a broad range of substances in the sample. This breadth comes at a cost of reduced sensitivity for compounds present in low concentrations. That is, analysis in TIM mode will likely not detect substances below a certain concentration threshold. By contrast, GCMS can be performed in SIM mode. In SIM mode, measurement is not made of all of the ion masses produced by the mass spectrometer, but rather focuses only on certain specific masses which are known to be indicative of the substance(s) of interest. This allows for the detection of much smaller concentrations of particular compounds. By instead focusing only on those masses associated with the compounds expected to be found in vanilla extract, the sensitivity of the GCMS analysis in SIM mode for the detection of vanilla compounds could have been increased somewhere between 10 times and 100 times from what appears to have been done by Alliance Technologies.

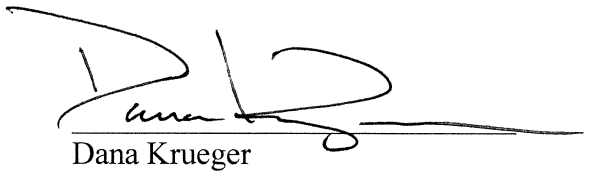
13. The Alliance Technologies GCMS analyses appear to have been performed using TIM mode only, rather than in SIM mode. By not focusing, using SIM mode analysis, on the particular target substances which might have indicated the presence of real vanilla extract, Alliance Technologies thus reduced the likelihood that chemicals indicative of real vanilla extract would be found.

14. It is unclear from their analytical reports how Alliance Technologies prepared the A & W beverage samples for gas chromatography. Vanillic acid and hydroxybenzoic acid – two of the four compounds indicative of real vanilla extract – are not very volatile, and at the temperatures typically used in a GCMS inlet, these substances may even be subject to thermal decomposition. Consequently, unless special techniques were used for sample extraction and derivitization, the test methodology used by Alliance Technologies made it unlikely that any vanillic acid or hydroxybenzoic acid present in A & W Root Beer or A & W Cream Soda would be detectable by their GCMS analysis.

15. In summary, the Alliance Technologies analysis is inconclusive as to the presence or absence of real vanilla extract in the samples of A & W Root Beer and A & W Cream Soda.

16. Alliance Technologies did confirm the presence of vanillin, the organic compound that is the primary flavor component of natural vanilla extract, in A&W Cream Soda. Because vanillin from vanilla beans and vanillin from other sources are indistinguishable by GCMS, it is impossible, based on the Alliance Technologies report, to conclude that the vanillin found in the A&W Cream Soda does not derive from natural vanilla.

Signed this 20th day of December, 2019.



Dana Krueger